

**Table 3—Comparison of Alternatives**

	<b>Alternative A—NPS Proposal</b>	<b>Alternative B</b>	<b>No Action</b>
<b>General Description</b>	<ul style="list-style-type: none"> <li>+ Provides a traditional park experience with limited development inside the park</li> <li>+ Current level of development and interpretation and the pattern of visitor use would be maintained</li> </ul>	<ul style="list-style-type: none"> <li>+ Provides a traditional park experience with increased personal services</li> <li>+ Same as proposal</li> </ul>	<ul style="list-style-type: none"> <li>+ Existing conditions would continue</li> </ul>
<b>Park Road</b>	<ul style="list-style-type: none"> <li>+ Historic significance and character protected</li> <li>+ Existing width and alignment permanently retained</li> <li>+ Any road work preserves road's special character</li> <li>+ Vegetation/trees cleared to restore views and distant features</li> <li>+ Pullouts, trailheads, and parking areas not enlarged</li> </ul>	<ul style="list-style-type: none"> <li>+ Same as proposal</li> <li>+ Alignment selectively altered</li> <li>+ Most of the road's special character would be maintained</li> <li>+ Same as proposal, more alterations likely</li> <li>+ Some minor enlargements and realignments could occur</li> </ul>	<ul style="list-style-type: none"> <li>+ Existing width and alignment of the road permanently retained</li> <li>+ Pullouts, trailheads, and parking areas along the road not enlarged</li> </ul>
<b>Bonita</b>	<ul style="list-style-type: none"> <li>+ Serves as start of foot trail</li> <li>+ Section from the picnic area to Stafford Cabin made accessible to visitors with mobility impairments</li> </ul>	<ul style="list-style-type: none"> <li>+ Same as proposal</li> </ul>	<ul style="list-style-type: none"> <li>+ Existing development would be retained</li> </ul>
<b>Faraway Ranch</b>	<ul style="list-style-type: none"> <li>+ Appropriate landscape restoration treatment for the main ranch</li> <li>+ Faraway historic vernacular landscape and CCC historic designed landscape areas managed as historic landscape</li> <li>+ Modifications would not reduce the integrity of resource</li> <li>+ Integrity of all landscape areas and features (historic vegetation, structures such as the Faraway pool, etc.) maintained</li> <li>+ Integrity of the CCC area's design principles and use of materials maintained</li> <li>+ Overhead power and telephone lines removed and installed underground</li> <li>+ Ranch buildings open to the public</li> <li>+ Trail along Bonita Creek, from the picnic area to Stafford Cabin, accessible for visitors with mobility impairments</li> <li>+ Most administrative functions would move to proposed visitor center</li> <li>+ Most vacated space available for visitor use and interpretation</li> <li>+ Upper floor, work and storage space, and the garage available to the interpreters</li> </ul>	<ul style="list-style-type: none"> <li>+ Same as proposal, but the focus of most efforts would be on historic structures and less on the historic landscape</li> <li>+ Little to no modification of the landscape</li> <li>+ Underground only in the immediate vicinity of the structures</li> <li>+ Limited access to selected buildings</li> <li>+ Same as proposal</li> <li>+ Some administrative functions would continue</li> <li>+ Same as no action</li> <li>+ Same as no action</li> </ul>	<ul style="list-style-type: none"> <li>+ Only landscape treatment maintenance and fire protection</li> <li>+ Fences, corrals, and outbuildings not restored or made accessible</li> <li>+ Ranch house/contents remain at risk of fire</li> <li>+ The collections remain unprotected by a climate control system</li> <li>+ Visitors continue approach by existing two-way trail</li> <li>+ Administrative functions remain in ranch buildings</li> </ul>

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Alternative A—NPS Proposal	Alternative B	No Action
<p><b>Faraway Ranch (Continued)</b></p> <ul style="list-style-type: none"> <li>+ Once administrative functions removed from the guest house, structure used as employee residence</li> <li>+ Climate control to protect the historic furnishings</li> <li>+ Fire suppression system to protect the house and contents</li> <li>+ Connect to main visitor center/housing area water system</li> <li>+ Standpipe installed near the parking lot for wildfire suppression</li> <li>+ Water system extended to the ranch parking area</li> <li>+ Two-way trail enlarged to a loop trail</li> </ul>	<ul style="list-style-type: none"> <li>+ Same as no action</li> <li>+ Same as proposal</li> <li>+ Same as proposal</li> <li>+ Same as proposal</li> <li>+ Same as proposal</li> <li>+ Same as no action</li> <li>+ Same as proposal</li> </ul>	
<p><b>Headquarters/Visitor Orientation Facility Outside</b></p> <ul style="list-style-type: none"> <li>+ New combined headquarters/ visitor orientation facility outside park</li> <li>+ No further development within the park</li> <li>+ New facility houses complete visitor orientation function and park administrative offices</li> <li>+ Parking includes adequate space for shuttle terminus and RV dump station</li> <li>+ Facility may include joint support function with the USFS</li> <li>+ Short-term lease or rent space in Willcox for administrative functions</li> </ul>	<ul style="list-style-type: none"> <li>+ Administrative facilities built outside park</li> <li>+ Same as proposal</li> <li>+ No visitor orientation function outside of park</li> <li>+ No services</li> <li>+ Same as proposal</li> <li>+ Same as proposal</li> </ul>	<ul style="list-style-type: none"> <li>+ Existing crowded working conditions, inadequate parking, and inadequate interpretive space would continue</li> </ul>
<p><b>Visitor Transportation System</b></p> <ul style="list-style-type: none"> <li>+ Transportation study under contract with Parsons Brinckerhoff to provide information for implementation. <i>Final actions are dependent on the outcome of the study</i></li> <li>+ Short-term peak—a limited hiker shuttle to either Massai Point or Echo Canyon</li> <li>- Limited hiker shuttle designed to keep long-term parking confined to monument base</li> <li>- Cost of transportation service paid for by surcharge</li> <li>- Bicycle racks fitted onto the shuttle vehicles so that bicyclists could also be transported</li> <li>+ Long-term plan—the hiker shuttle system doubled in size and capacity</li> <li>- Based outside park boundaries</li> <li>- Free up spaces/allow Massai Point to operate maximum capacity during peak visitation hours</li> <li>- New transit vehicles/stable base—operated by a monument concessioner</li> </ul>	<ul style="list-style-type: none"> <li>+ Same as proposal</li> </ul>	<ul style="list-style-type: none"> <li>+ No transportation study or system planned</li> </ul>

**Table 3—Comparison of Alternatives**

<b>Alternative A—NPS Proposal</b>		<b>Alternative B</b>	<b>No Action</b>
<b>Housing/Maintenance Area</b>	<ul style="list-style-type: none"> <li>+ Maintenance functions and fuel supplies removed to the new headquarters/visitor orientation facility complex</li> <li>+ Vacated space used for fire equipment, emergency medical supplies, rescue cache, and a warehouse</li> <li>+ Provide added resource protection, emergency repairs, and law enforcement because of relocation</li> <li>+ All housing units retained in present use</li> <li>+ Superintendent's house eventually removed/site returned to natural condition.</li> <li>+ Need for in-park housing/ the potential for providing housing outside the park considered</li> </ul>	<ul style="list-style-type: none"> <li>+ Same as no action</li> <li>+ Same as no action</li> <li>+ Same as no action</li> <li>+ Same as proposal</li> <li>+ Same as proposal</li> <li>+ Same as proposal</li> </ul>	<ul style="list-style-type: none"> <li>+ Maintenance activities remain in present location</li> <li>+ Housing area would be same as for proposal</li> </ul>
<b>Boneyard</b>	<ul style="list-style-type: none"> <li>+ Boneyard/firearms training range use ended / areas restored to a natural condition</li> </ul>	<ul style="list-style-type: none"> <li>+ Same as proposal</li> </ul>	<ul style="list-style-type: none"> <li>+ Inconsistent use of the wilderness area would continue</li> </ul>
<b>Campground</b>	<ul style="list-style-type: none"> <li>+ Operations continue in safe and prudent manner by selective closures and flood threat awareness training for staff/visitors</li> <li>+ Campground operation plan developed.</li> <li>+ Septic system replaced</li> <li>+ No recreation vehicle hookups or dump station added</li> </ul>	<ul style="list-style-type: none"> <li>+ Same as proposal</li> </ul>	<ul style="list-style-type: none"> <li>+ The existing campground would be retained, and the septic system would not be replaced</li> </ul>
<b>Trails</b>	<ul style="list-style-type: none"> <li>+ NPS &amp; USFS jointly examine opportunities for connecting trails</li> <li>+ The dirt road to the King of Lead Mine converted to a trail if property is added to monument</li> </ul>	<ul style="list-style-type: none"> <li>+ Same as proposal</li> </ul>	<ul style="list-style-type: none"> <li>+ Existing trails retained</li> </ul>
<b>King of Lead Mine</b>	<ul style="list-style-type: none"> <li>+ The King of Lead Mine acquired, and the park boundary extended if appropriate</li> <li>+ Haul road closed to vehicular use, returned to a natural condition (except for a foot trail), administratively added to the surrounding wilderness area</li> </ul>	<ul style="list-style-type: none"> <li>+ Same as proposal</li> </ul>	<ul style="list-style-type: none"> <li>+ No further steps with state/mine owner to mitigate mine pollution/acquire the property</li> <li>+ Haul road not added to surrounding wilderness</li> <li>+ Warning sign erected</li> </ul>
<b>Sugarloaf</b>	<ul style="list-style-type: none"> <li>+ Parking area configured to add day use</li> <li>+ Limited vista clearing</li> <li>+ The Sugarloaf road, overlook, trail, and fire tower remain unchanged</li> </ul>	<ul style="list-style-type: none"> <li>+ Same as no action</li> </ul>	<ul style="list-style-type: none"> <li>+ Sugarloaf road, overlook area, trail, and fire tower remain unchanged</li> </ul>
<b>Echo Canyon</b>	<ul style="list-style-type: none"> <li>+ Parking lot reconfigured to alleviate peak parking problems</li> <li>+ Limited vista clearing</li> </ul>	<ul style="list-style-type: none"> <li>+ Same as no action</li> </ul>	<ul style="list-style-type: none"> <li>+ Overlook, parking, and trail head area unchanged</li> </ul>

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			<b>Alternative A—NPS Proposal</b>	<b>Alternative B</b>	<b>No Action</b>
	<b>Massai Point</b>		<ul style="list-style-type: none"> <li>+ Parking area vehicular flow improved</li> <li>+ Trailheads made safer, and a new rest room installed</li> <li>+ Vegetation around parking thinned / pruned to restore views</li> <li>+ Directional and informative signs installed</li> <li>+ Improvements compatible with CCC landscape</li> <li>+ Exhibit building use continues</li> <li>+ Exhibits modernized to conform to interpretive plan</li> <li>+ Outdoor sitting area and interpretive space built</li> <li>+ Summit made handicapped accessible</li> </ul>	+ Same as proposal	+ No change
	<b>Wilderness</b>		<ul style="list-style-type: none"> <li>+ Parts of King of Lead haul road administratively added</li> <li>+ Rehabilitation of boneyard and firearms training range</li> <li>+ Minor trail realignments</li> <li>+ Increased emphasis on wilderness education</li> </ul>	+ Same as proposal	+ No change in current operations
	<b>Boundary</b>		<ul style="list-style-type: none"> <li>+ No boundary changes</li> <li>+ Headquarters/visitor orientation facility along route</li> </ul>	+ No boundary changes	No boundary changes
	<b>Fire Program</b>		<ul style="list-style-type: none"> <li>+ Improvements by reduction in development, structures, operations, and traffic inside the boundaries</li> <li>+ New headquarters/visitor orientation facility outside the park and support facilities safe from wildland fire</li> <li>+ Water system improvements add fire suppression capabilities</li> <li>+ Fire used to restore historic vegetation conditions</li> <li>+ Joint planning with USFS to support using fire in the wilderness</li> <li>+ Increased emphasis is on wilderness interpretation and education</li> </ul>	<ul style="list-style-type: none"> <li>+ No change</li> <li>+ No change</li> <li>+ Same as proposal</li> <li>+ Same as proposal</li> <li>+ Same as proposal</li> <li>+ Same as proposal</li> </ul>	<ul style="list-style-type: none"> <li>+ Program focus the same but less fire program than action alternatives</li> <li>+ Fire management officer position filled/joint USFS planning continues</li> <li>+ Acreage burned increased to reduce fuels/restore fire ecosystem process</li> <li>+ Fire hazards and safety risks would be higher for people and structures</li> <li>+ Facilities, housing, campgrounds, traffic flows, etc., unchanged</li> <li>+ Roads and parking lots not cleared or improved</li> <li>+ Inadequate water for suppression remains</li> <li>+ Cultural landscape information not available for restoring historic scenes</li> <li>+ Interpretation unchanged</li> </ul>
	<b>Commercial Services</b>		<ul style="list-style-type: none"> <li>+ Commercial horseback, hiking, and tour bus services outside the park continue</li> <li>+ Emphasis on encouraging others such as private business and USFS to camping opportunities</li> <li>+ Activities are necessary and appropriate for the park would be consistent with visitor experience and resource</li> </ul>	+ Same as proposal	+ Commercial horseback, hiking, and tour bus services originating outside park continues

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<b>Alternative A—NPS Proposal</b>		<b>Alternative B</b>	<b>No Action</b>
<b>Water System</b>	+ Water systems upgraded to meet public health standards	+ Same as proposal	+ Water systems not meeting public health standards replaced or modified as needed
<b>Operation al Costs</b>	+ \$233,500 Additional (See Table 1 comparison)	+ \$186,500 (See Table 1 comparison)	+ Current budget
<b>Development Costs</b>	+ \$5.8 million (See Table 2 comparison)	+ \$3.6 Million (See Table 2 comparison)	+ None

**Table 4—Comparison of Environmental Impacts**

	<b>Alternative A—NPS Proposal</b>	<b>Alternative B</b>	<b>No-Action</b>
<b>Visitor Experience</b>	<ul style="list-style-type: none"> <li>+ Slight vegetation clearing/modification of trail to Stafford Cabin</li> <li>+ Improve visitor experience, accessibility, and safety</li> <li>+ Visitor experience at Faraway Ranch enhanced—improvements in building accessibility               <ul style="list-style-type: none"> <li>- More historically accurate landscape depiction</li> <li>- Improved preservation maintenance</li> <li>- Increased climate control—better display original museum collection objects</li> <li>- Restoration of historic footpath circulation—more accurate and effective experience</li> </ul> </li> <li>+ Old visitor center conversion to environmental ed. center increases capability to provide quality environmental ed. programs</li> <li>+ New headquarters/visitor orientation facility improves visitor orientation/removes scattered facilities/operations reducing noise and traffic</li> <li>+ Expansion of hiker shuttle/long-term transportation system alleviates parking problems</li> <li>+ Reconfigure of Echo Canyon/Massai Point increases parking by 50 spaces, reducing congestion</li> </ul>	<ul style="list-style-type: none"> <li>+ Little to no clearing/modification of trail to Stafford Cabin</li> <li>+ Improve visitor experience, accessibility, and safety</li> <li>+ Visitor experience at Faraway Ranch improved—improvements in building accessibility               <ul style="list-style-type: none"> <li>- Less historically accurate landscape depiction</li> <li>- Improved preservation maintenance</li> <li>- Increased climate control—better display original museum collection objects</li> <li>- Slight improvements to historic footpath circulation</li> </ul> </li> <li>+ Continued inadequate visitor orientation function (see description in no-action)</li> <li>+ Expansion of hiker shuttle/long-term transportation system alleviates parking problems</li> </ul>	<ul style="list-style-type: none"> <li>+ Retention of narrow width/lack of shoulders/tight turn radii, the road remains inadequate for large recreation vehicles /increased bus traffic/congestion.</li> <li>+ Very limited parking at major points of interest, decrease visitors' ability to see park</li> <li>+ Park boneyard has negative effect on visitor experience—air quality, noise, and traffic</li> <li>+ Crowded conditions remain</li> <li>+ Depending on time of year and day of the week, the campground can be very quiet or completely filled and boisterous.</li> <li>+ Visitors who use the campground generally report an outstanding camping experience</li> <li>+ Wildlife and wilderness experience not retained</li> </ul>
<b>Archeological Resources</b>	<ul style="list-style-type: none"> <li>+ New Headquarters/visitor orientation facility beneficial</li> <li>+ Inventory increase knowledge of historic/prehistoric/better interpretation</li> <li>+ Mitigation               <ul style="list-style-type: none"> <li>- King of Lead Mine acquired—archeologically inventoried/evaluated</li> <li>- replace campground septic system</li> <li>- extend the water system</li> <li>- enlarging the two-way trail</li> <li>- restore “boneyard” to its natural</li> </ul> </li> <li>+ Archeological survey §106               <ul style="list-style-type: none"> <li>- Minimizes intrusions on viewsheds/benefits experience</li> <li>- Less-developed/historic views</li> </ul> </li> <li>+ At Faraway Ranch               <ul style="list-style-type: none"> <li>- reduce the administrative use</li> <li>- rehab areas/provide additional interpretation/opportunities, improve building conditions</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>+ Inventory increase knowledge of historic/prehistoric/better interpretation</li> <li>+ Mitigation               <ul style="list-style-type: none"> <li>- King of Lead Mine acquired—archeologically inventoried/evaluated</li> <li>- replace campground septic system</li> <li>- extend the water system</li> <li>- enlarging the two-way trail</li> <li>- restore “boneyard” to its natural</li> </ul> </li> <li>+ Archeological survey §106               <ul style="list-style-type: none"> <li>- Minimizes intrusions on viewsheds/benefits experience</li> </ul> </li> <li>+ At Faraway Ranch               <ul style="list-style-type: none"> <li>- reduce the administrative use</li> <li>- rehab areas/provide additional interpretation/opportunities, improve building conditions</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>+ Most known archeological resources not impacted</li> <li>+ The boneyard not inventoried, continued use may adversely affect possible sites</li> <li>+ Mitigation               <ul style="list-style-type: none"> <li>- Archeological inventory and §106 consultation required for the no-action alternative</li> <li>- The Faraway historic vernacular landscape/CCC historic managed historic landscape resources</li> <li>- Maintaining integrity/Faraway landscape areas/features results in no adverse effect on landscape</li> <li>- Integrity CCC area design principles/ use of materials maintained, preserving resources/resulting in no adverse effect</li> </ul> </li> </ul>

**Table 4—Comparison of Environmental Impacts**

	<b>Alternative A—NPS Proposal</b>	<b>Alternative B</b>	<b>No-Action</b>
<b>Cultural Landscape and Historic Resources</b>	<ul style="list-style-type: none"> <li>+ Buildings/facilities accessible to mobility impaired</li> <li>+ Enable people w/ mobility impairments to experience the interiors</li> <li>+ Faraway historic vernacular landscape/ CCC historic landscape               <ul style="list-style-type: none"> <li>- Modifications for visitor safety and accessibility made not to reduce the integrity</li> <li>- Maintain the integrity—no adverse effect on this landscape</li> </ul> </li> <li>+ Integrity CCC areas design principles / use of materials preserving resources -- no adverse effect               <ul style="list-style-type: none"> <li>- Circulation pattern rearranged—more historically accurate and attractive</li> <li>- Several CCC structures—significant changes in use</li> <li>- Changes result in reduced developmental pressure on the buildings and the surrounding cultural landscape</li> <li>- Less intensive use of buildings</li> <li>- Continuing preservation maintenance</li> <li>- Prolong building life</li> </ul> </li> <li>+ The campground area               <ul style="list-style-type: none"> <li>- Handicapped accessibility improved</li> <li>- Utilities underground</li> <li>- Handicapped accessibility modifications/no adverse effect on historic structures or cultural landscape</li> <li>- Underground utilities placement beneficial on setting</li> <li>- No adverse effect on buildings or structures</li> </ul> </li> <li>+ CCC trails maintained—no adverse effect on integrity CCC Massai Point               <ul style="list-style-type: none"> <li>- Road repaved—no widening/straightening to ensure safety</li> <li>- Vista clearing expose rock formations restores vistas/preserves road character/original experience</li> <li>- Massai Point exhibit building handicapped accessible—enable mobility impaired visitors to use vistas</li> <li>- Handicapped accessible trail to be built effect on cultural landscape minimal</li> <li>- Ramp necessary; constructed in a reversible manner</li> </ul> </li> <li>+ Impacts of the primary park road same as no-action               <ul style="list-style-type: none"> <li>- Current use limited/parking spaces</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>+ Buildings/facilities accessible to mobility impaired</li> <li>+ Enable people w/ mobility impairments to experience the interiors</li> <li>+ Faraway historic vernacular landscape/ CCC historic landscape               <ul style="list-style-type: none"> <li>- Modifications for visitor safety and accessibility made not to reduce the integrity</li> <li>- Maintain the integrity--no adverse effect on this landscape</li> </ul> </li> <li>+ Integrity CCC areas design principles/ use of materials preserving resources—no adverse effect               <ul style="list-style-type: none"> <li>- Several CCC structures—significant changes in use</li> <li>- Changes result in reduced developmental pressure on the buildings</li> <li>- Less intensive use of buildings</li> <li>- Continuing preservation maintenance</li> <li>- Prolong building life</li> </ul> </li> <li>+ The campground area               <ul style="list-style-type: none"> <li>- Handicapped accessibility improved</li> <li>- Utilities underground</li> <li>- Handicapped accessibility modifications/no adverse effect on historic structures or cultural landscape</li> <li>- Underground utilities placement beneficial on setting</li> <li>- No adverse effect on buildings or structures</li> </ul> </li> <li>+ CCC trails maintained—no adverse effect on integrity CCC Massai Point               <ul style="list-style-type: none"> <li>- Road repaved—no widening/straightening ensure safety.</li> <li>- Vista clearing expose rock formations restores vistas/preserves road character/original experience</li> <li>- Massai Point exhibit building handicapped accessible—enable mobility impaired visitors to use vistas</li> <li>- Handicapped accessible trail to be built effect on cultural landscape minimal</li> <li>- Ramp necessary; constructed in a reversible manner</li> </ul> </li> <li>+ Impacts of the primary park road same as no-action               <ul style="list-style-type: none"> <li>- Current use limited/parking spaces</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>+ Without restoration of landscape/structures used to explain condition</li> <li>+ Perpetuate divergence of condition...some in good/others in poor</li> <li>+ Continuing loss of integrity for some resources</li> <li>+ Continue use of several historic structures for inappropriate purposes</li> <li>+ Structures do not meet collection storage/office space needs/use prevents appropriate interpretation</li> <li>+ Continued overuse of visitor center/headquarters area reduce the integrity</li> <li>+ Continued incremental alteration of these historic structures</li> <li>+ Inevitable incremental changes, cumulatively over time, contribute to the loss of the structures and their settings, integrity</li> <li>+ No effect on the physical integrity of the CCC built Massai Point road or trails</li> <li>+ Vehicle congestion not addressed/diminished visitor experience</li> <li>+ Alterations from natural erosion and vegetation patterns along the road corridor—exotic plants evident               <ul style="list-style-type: none"> <li>- 7 to 67 animals killed per year since 1995 attributed to condition</li> <li>- Potential to disturb wildlife and visitors increased</li> <li>- Moderate localized negative impact</li> </ul> </li> <li>+ Presence, preservation, and use of the Faraway Ranch historic district/several negative impacts to the natural area:               <ul style="list-style-type: none"> <li>- Visitor use disrupts wildlife;</li> <li>- Picnicking, employee presence, and maintenance of fruit trees and a windmill provide nonnatural sources of food and water for wildlife</li> <li>- Preservation of historic structures/fire prevention eliminates fire created natural ecosystems</li> <li>- Continued inaccurate historical scene</li> <li>- More difficult to control exotics/wildland fire</li> <li>- Native wildlife—a less natural habitat</li> <li>- Slight incremental negative impact to the surface hydrology/heavier vegetation contributes to lessening surface creek flow</li> <li>- Adaptive historic structures use invites rodents, requires intensive pest management</li> </ul> </li> </ul>

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Alternative A—NPS Proposal		Alternative B	No-Action
Cultural Landscape and Historic Resources (cont.)	<ul style="list-style-type: none"> <li>- Vista clearing minimal effect on habitat for wildlife/localized—disturb wildlife—natural sounds</li> <li>- Reduces occupation of several historic structures</li> <li>- Vegetation management program improves natural landscape</li> </ul>	<ul style="list-style-type: none"> <li>- Reduces occupation of several historic structures</li> </ul>	
	<p><b>Long-Term Health of Ecosystems</b></p> <ul style="list-style-type: none"> <li>+ Shuttle—creates the potential greater negative by concentrating use: human impacts to natural ecosystem               <ul style="list-style-type: none"> <li>- Shuttle to reduce total number of vehicles/positive effect for wildlife, air quality, and the ability to hear natural sounds</li> <li>- Current use is limited by parking</li> <li>- Shuttle system deliver more visitors creating greater negative human impacts to natural ecosystem</li> </ul> </li> <li>+ Eliminating offices/collection storage at Faraway Ranch—reduces occupation of several historic structures/staff traffic, parking, food presence</li> <li>+ Vegetation management:               <ul style="list-style-type: none"> <li>- More consistent natural vegetative landscape</li> <li>- Depend on historic landscape studies reduce number of encroaching trees</li> <li>- More accurate historical scene assist with control of the 65 exotics</li> <li>- Provide more options for reducing hazard fuels/restoring natural fire regime</li> <li>- Reduction in exotic plants favor native wildlife—increased native food source/habitat</li> <li>- Soils and natural sounds unaffected</li> <li>- Impacts are local and relatively moderate in severity</li> </ul> </li> <li>+ Rearranging circulation—reduce harmful foot traffic/eliminating social trails</li> <li>+ Relocation boneyard—eliminate negative environmental/visitor impacts—relocation outside monument provide most benefit</li> <li>+ New headquarters/visitor orientation facility/administrative facility outside monument—positive environmental effects</li> <li>+ Removal maintenance operation               <ul style="list-style-type: none"> <li>- Reduce negative environmental effects.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>+ Shuttle—creates the potential greater negative by concentrating use: human impacts to natural ecosystem               <ul style="list-style-type: none"> <li>- Shuttle to reduce total number of vehicles/positive effect for wildlife, air quality, and the ability to hear natural sounds</li> <li>- Current use is limited by parking</li> <li>- Shuttle system deliver more visitors creating greater negative human impacts to natural ecosystem</li> </ul> </li> <li>+ Eliminating offices/collection storage at Faraway Ranch—reduces occupation of several historic structures/staff traffic, parking, food presence</li> </ul> <ul style="list-style-type: none"> <li>+ Rearranging circulation—reduce harmful foot traffic/eliminating social trails</li> <li>+ Relocation boneyard—eliminate negative environmental/visitor impacts—relocation outside monument provide most benefit</li> </ul> <ul style="list-style-type: none"> <li>+ Removal maintenance operation               <ul style="list-style-type: none"> <li>- Reduce negative environmental effects</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>+ Lawn maintenance/ranch house requires regular water applications—maintain Faraway landscape according to its historical form---compromise natural features--overall impacts localized and continue indefinitely               <ul style="list-style-type: none"> <li>- Heavy equipment greatly compacts soil</li> <li>- Natural erosion/runoff altered</li> <li>- Waste wood, metal, PVC pipe, stone, cardboard, trash, and gravel provides potential contamination</li> <li>- 1/4<sup>th</sup> site/one storage structure within wilderness—use generates occasional loud noise disturb wildlife and natural quiet</li> <li>- Continued use of visitor center impacts to the natural ecosystem in limited area—soil compaction/modified erosion/runoff</li> <li>- Compaction along trails</li> <li>- Limited impacts on nocturnal wildlife</li> <li>- VC generates noise by attracting/channeling human activities</li> <li>- Vehicle traffic, picnicking, visitor activities, and administrative use—disturb the natural quiet</li> <li>- Moderate localized impact to natural ecosystem</li> </ul> </li> <li>+ Facilities on sloping area/some ground modifications/alteration from drainage natural flow from building runoff</li> <li>+ Nighttime lighting attracts insects/bats/human food/other wildlife/negatively impacts natural quiet.</li> <li>+ Superintendent's house—limited negative/ wildlife, natural water runoff, soil compaction, and natural quiet—presence precludes natural wildfire</li> <li>+ Campground negative to natural ecosystem—disturb natural quiet, increase water use, generation of human</li> </ul>



**Table 4—Comparison of Environmental Impacts**

	<b>Alternative A—NPS Proposal</b>	<b>Alternative B</b>	<b>No-Action</b>
<b>Long-Term Health of Ecosystems</b>	<ul style="list-style-type: none"> <li>- Undergrounding utilities positive by reducing visual presence/short-term negative impacts to wildlife</li> <li>+ Impacts of the superintendent's house and access road—same as in no action</li> <li>- Short-term negative impact--erosion, soil disturbance, some vegetation cutting—disrupt wildlife/reduce ability to hear natural sounds</li> <li>+ Improve safety in campground—flash flood threat</li> <li>- Selective closure options: campground operation plan/significantly lower threat to life and property</li> <li>- Plan/regularly educate staff/visitors</li> <li>- Periodically review relative weather/ flooding information</li> <li>- Damaged in future flooding/consider closing Bonita Creek campground on seasonal/entire basis or convert to day use</li> <li>- Effects same as no-action alternative, except: putting utilities underground reduce their visual presence and negative impacts to</li> <li>- Short-term negative impact/the under-grounding process—erosion, soil disturbance, some vegetation cutting, disrupt wildlife and reduce the ability to hear natural sounds.</li> <li>+ King of Lead—long-term positive</li> <li>- Preserve viewshed, eliminating further contamination</li> <li>- Eliminate road/cuts through wilderness</li> <li>- negative effects—rehabilitation process:soil erosion/equipment noise/ wildlife disruptions/air quality/cutting vegetation</li> <li>+ Mitigation: <ul style="list-style-type: none"> <li>- Scheduling work during slower visitor periods/when wildlife disruptions lessened</li> <li>- Using soil loss abatement procedures</li> <li>- Additional fill material from compatible sources</li> <li>- Use native seed—protect genetic material during reseeded</li> <li>- No property purchase until certified as safe for uses proposed</li> </ul> </li> <li>+ Sugarloaf, Echo Canyon, and Massai same as no-action, except vista clearing—temporary noise/wildlife disruptions/removal vegetation—minor, negative to small area</li> </ul>	<ul style="list-style-type: none"> <li>- Undergrounding utilities positive by reducing visual presence/short-term negative impacts to wildlife</li> <li>+ Impacts of the superintendent's house and access road—same as in no action</li> <li>- Short-term negative impact—erosion, soil disturbance, some vegetation cutting—disrupt wildlife/reduce ability to hear natural sounds</li> <li>+ Improve safety in campground—flash flood threat</li> <li>- Selective closure options: campground operation plan/significantly lower threat to life and property</li> <li>- Plan/regularly educate staff/visitors</li> <li>- Periodically review relative weather/ flooding information</li> <li>- Damaged in future flooding/ consider closing Bonita Creek campground on seasonal/entire basis or convert to day use</li> <li>- Effects same no-action alternative, except: putting utilities underground reduce their visual presence and negative impacts</li> <li>- Short-term negative impact/the under-grounding process—erosion, soil disturbance, some vegetation cutting, disrupt wildlife and reduce the ability to hear natural sounds</li> <li>+ King of Lead—long-term positive</li> <li>- Preserve viewshed, eliminating further contamination</li> <li>- Eliminate road/cuts through wilderness</li> <li>- Negative effects—rehabilitation process:soil erosion/equipment noise/ wildlife disruptions/air quality/cutting vegetation</li> <li>+ Mitigation: <ul style="list-style-type: none"> <li>- Scheduling work during slower visitor periods/when wildlife disruptions lessened</li> <li>- Using soil loss abatement procedures</li> <li>- Additional fill material from compatible sources</li> <li>- Use native seed—protect genetic material during reseeded</li> <li>- No property purchase until certified as safe for uses proposed</li> </ul> </li> <li>+ Sugarloaf, Echo Canyon, and Massai same as no-action</li> </ul>	<p>waste and trash, creation of social trails,the presence of domestic animals, cooking, evening campfire programs, vehicle traffic, all contribute negatively</p> <ul style="list-style-type: none"> <li>- Location of campground creates potential human safety problem during heavy rainfalls</li> <li>- Flash flood risk to human campsites and the evacuation routes within the floodplain</li> <li>- Campground negates opportunity improvement in natural fire regime</li> <li>- Occasional wildlife and visitor conflicts require relocation of the animals</li> <li>+ 100-acre King of Lead Mine—soil require cleanup if NPS acquired the property <ul style="list-style-type: none"> <li>- King of Lead and Red Horse Mines/moderate negative effect on natural ecosystem</li> <li>- Preliminary tests show contamination</li> </ul> </li> <li>+ Road into Sugarloaf parking area, picnic site, and trail to lookout create negative impacts: <ul style="list-style-type: none"> <li>- Soil compaction, erosion, alteration of natural rainfall sheetflow, wildlife disruption, trash disposal, development of social trails, and noise creation that disturbs the natural quiet</li> <li>- Periodic preservation maintenance—add to the human presence</li> <li>- Staffing of lookout/fire management program brings regular human contact</li> </ul> </li> <li>+ 19 miles of trail/7 different trailheads in wilderness—periodic trail maintenance and erosion control <ul style="list-style-type: none"> <li>- Localized soil compaction, interruption of natural water flow, and disruption to wildlife caused by visitor foot traffic</li> <li>- Minor and localized negative impacts,</li> <li>- Use of horses compacts the soil/introduce exotic plants/negatively affects migrating animals such as neotropical migratory birds, and animals with large home ranges, such as mountain lions</li> </ul> </li> <li>+ Use of the wilderness by researchers doing permitted studies—disruptive to wildlife in short term</li> <li>+ Studies may involve consumptive use/harvesting plants etc.</li> </ul>

**Table 4—Comparison of Environmental Impacts**

	<b>Alternative A—NPS Proposal</b>	<b>Alternative B</b>	<b>No-Action</b>
<b>Long-Term Health of Ecosystems</b>	+ Wilderness same as no-action King of Lead/access road/protect/improve wilderness integrity/size	+ Wilderness same as no-action King of Lead/access road/protect/improve wilderness integrity/size	
<b>Economic Contribution to Gateway Communities</b>	+ Minor short-term increase economic contribution to local community - Short term—expenditure \$6,000,000—\$10.5 million in combined sales, \$1 million in tax revenue/445 jobs. - Long term—increases \$233,500 operational budget—\$419,000 in combined sales, \$35,000 in tax revenue, 18 jobs - Every 1,000 additional visits, \$45,000 in combined sales /\$3,800 in revenue/2 jobs - Every \$100,000-\$180,000 in combined sales /\$15,000 in tax revenue/8 jobs	+ Minor short-term increase economic contribution to local community - Short term—expenditure \$4,000,000—\$6.9 million in combined sales, \$.7 million in tax revenue/294 jobs. - Long term—increases \$186,500 operational budget—\$335,000 in combined sales, \$28,000 in tax revenue, 14 jobs - Every 1,000 additional visits, \$45,000 in combined sales/\$3,800 in revenue/2 jobs - Every \$100,000-\$180,000 in combined sales/\$15,000 in tax revenue/8 jobs	+ Continue to provide income to local economy + No change in total combined sales, sales benefits from park tourism, jobs created, and total tax revenue
<b>Adjacent Landowners</b>	+ Ensure preservation/protection of Bonita Creek watershed—eliminate threat of future mining/development Work with USFS/adjacent landowners - Camping facilities outside park/overflow camping situation—reduce impacts to sensitive riparian areas on USFS lands - Consider closing all/part of Bonita Creek campground on a seasonal/entire basis or convert it to day use picnicking only, if flooded + New facility outside boundary: - Consolidation/administrative functions - Savings in human/fiscal resources - Historic structures/more appropriately used	+ Ensure preservation/protection of Bonita Creek watershed—eliminate threat of future mining/development Work with USFS/adjacent landowners - Camping facilities outside park/overflow camping situation—reduce impacts to sensitive riparian areas on USFS lands - Consider closing all/part of Bonita Creek campground on a seasonal/entire basis or convert it to day use picnicking only, if flooded + New facility outside boundary: - Consolidation/administrative functions - Savings in human/fiscal resources - Historic structures/more appropriately used	+ Substantial change to existing conditions - Potential adverse impacts to Bonita Creek watershed if inactive King of Lead Mine reopened/adverse development if sold to private interests - No sewage dumping station/continued dumping of raw sewage onto state highway right-of-way/private property - Lack of overflow camping facilities—displacing camping to sensitive riparian areas on adjacent USFS lands/affects private landowners + Continuance of the present situation - Use/inadequate in size; lacking heating and air conditioning/no reasonable access to modern office equipment, /significant exposure to rodent-borne diseases— <i>hantavirus</i>

**Table 4—Comparison of Environmental Impacts**

	<b>Alternative A—NPS Proposal</b>	<b>Alternative B</b>	<b>No-Action</b>
<b>Operational Efficiencies</b>	<ul style="list-style-type: none"> <li>- New maintenance facilities prevent inappropriate encroachment into wilderness</li> <li>- Savings realized by adequate storage facilities to safeguard equipment, supplies, and materials</li> <li>- Visitors more adequately served with facility</li> <li>+ Monument staff and visitors better informed—flash flood/Bonita Creek campground</li> <li>+ Improved water system enhance employee/visitor safety ensuring dependable water supply</li> </ul>	<ul style="list-style-type: none"> <li>- New maintenance facilities prevent inappropriate encroachment into wilderness</li> <li>- Savings realized by adequate storage facilities to safeguard equipment, supplies, and materials</li> <li>+ Monument staff and visitors better informed—flash flood/Bonita Creek campground</li> <li>+ Improved water system enhance employee/visitor safety ensuring dependable water supply</li> </ul>	<ul style="list-style-type: none"> <li>- Wasted time because of travel to the headquarters facility to use fax/copy machine</li> <li>- Communication links difficult to maintain</li> <li>- Maintenance facility lacks size, functionality, and good location</li> <li>- Expensive equipment/supplies exposed to elements due to inadequate space</li> <li>- Outdoor storage encroaches on wilderness</li> <li>+ Visitor center too small to conduct environmental education</li> <li>+ Water distribution inadequate to meet public health. Dead-end lines/stagnant-dangerous water supply/system inadequate for fire protection</li> <li>+ Sewage system exceeded maximum design capability/excessive raw sewage entering shallow aquifer</li> </ul>
<b>Cumulative Effects</b>	<p>+ Impact analysis of the proposed GMP analyzes all actions in the past, present, and reasonably foreseeable future that would affect Chiricahua NM and its visitors. No cumulative effects or elements of precedence were identified by any of the alternatives considered</p>		NA

## ENVIRONMENTAL CONSEQUENCES

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### VISITOR EXPERIENCE

#### Affected Environment

Annual visitation has ranged from 85,000 to 120,000 over the past five years. Visitation is highest in the spring and lowest in mid-winter and summer. About 40% come on weekends. The majority of regional visitation comes from Tucson, Phoenix, and Sierra Vista. The peak visitation months in the monument are March, April, and May. The average number of visitors for those months in 1998 was 10,334.

Visitation to the monument has fluctuated over the past ten years. Visitation levels to the monument have gradually fallen since 1994. Possible explanations for this reduction in visitations could be the 1994 Rattlesnake Fire and the 1996 government shutdown. Severe weather and park closures during the El Nino weather pattern in 1998 were a definite factor. Trends for 1999 are showing a tremendous increase in visitation. Visitation was up over 100% for the month of February alone.

Future visitation is expected to increase dramatically. The Arizona State Parks System is scheduled to open a new park, Kartchner Caverns, in the fall of 1999. The state predicts an additional 300,000 to 400,000 new visitors per year to Cochise County as a result of the new park opening. The short 60-mile drive from Kartchner Caverns to Chiricahua promises to substantially increase monument visitation.

Currently, the monument operates a seasonal hiker shuttle that takes hikers from the visitor center, campground, or Faraway Ranch areas to their trailhead destinations. Volunteer drivers using a government-owned 15-passenger van operate the shuttle. The shuttle provides one to two trips per day and charges \$2.00 per passenger. A survey of shuttle riders conducted in the spring of 1996 indicated that 6% of the visitors rode the shuttle. The

same survey also indicated that 68% of the riders did some hiking. In 1998, the existing hiker shuttle made approximately 292 trips and transported 1,580 people. The shuttle departs the visitor center at 8:30 each morning when someone wants to go hiking. Ridership on the hiker shuttle has been steady and increasing, despite an overall lower annual visitation rate in the last several years. At certain times during the spring peak visitation season, the shuttle makes two trips up to the trailheads in order to accommodate everyone. The existing system is not designed to transport people back down the mountain at specific time intervals; it is only designed for one-way travel.

Hikers in the wilderness have a large space and relatively few encounters, except during the busier periods and on the Echo Loop trail. Because of its rugged nature, this area would attract only a certain percentage of potential visitors. The trail system can absorb considerably more use than it currently receives, especially on some of the less-hiked trails.

Visitors to the Faraway Ranch Historic District are in a built, social environment and expect the company of others as they walk about the grounds and visit the buildings. Visitors to the more confined ranch house are controlled by entering only on guided tours, which holds the number of people at one time to a level that both facilitates interpretation and protects the house and its furnishings. Here visitors have the opportunity to walk through and learn about a frontier Arizona homestead and its subsequent evolution into an early guest ranch. The ranch was the scene of human activity, at some times quite busy, so it is appropriate for the visitor to view and learn about the historic place in the company of other visitors. Some of the visitors would be grouped together on conducted tours, others merely passing on the paths or being in close proximity at interpretive exhibits.

Only when large touring or school groups are present, or during the busiest weekends, would crowding be an issue.

Visitors to the developed areas (visitor center, picnic areas, Massai Point and other trailheads, campground, road corridor, housing area) can experience crowding, generally on weekends, holidays, and busy periods during the spring. These are high-density areas, and visitors do not have the expectation of solitude or escape here. Relative crowding is acceptable and is to be expected. Here visitors can acquire information, view exhibits, use rest room and telephone facilities, and have a safe and informative experience. There is no formal, indoor area where interpretive programs or presentations can be made or where groups can meet. This function is generally done in the campground, parking area, or on the approach steps to the visitor center. It is possible for visitors to the developed features in the monument to find some measure of solitude and relative aloneness. This can happen during off-peak hours (night in the campground or at Massai Point, early morning at the trailhead, etc.).

### **Impacts of Proposed GMP— Alternative A**

Impacts of the primary park road and first picnic area would be the same as in the no-action alternative, except that slight vegetation clearing and modification of the trail to Stafford Cabin for accessibility would improve visitor experience and safety.

The visitor experience at Faraway Ranch would be enhanced by improvements in building accessibility. Implementation of an accurate landscape management program would provide more historically accurate landscape depiction. Improved preservation maintenance would allow for better presentation of historic structures. Increased climate control would allow for better display of original museum collection objects. Restoration of historic footpath

circulation through the district would provide a more accurate and effective experience for visitors.

Conversion of the old visitor center to an environmental education center would greatly increase the capability of the monument to provide quality environmental education programs, and to a larger audience. Construction of the new headquarters/visitor orientation facility would greatly improve visitor orientation to and interpretation of the monument and provide for expected increase in visitation based on the assumption document in the affected environment section. This would provide a more logical and effective sequence for visiting the monument, would provide a meeting room and presentation area for groups, and would remove many of the small and scattered facilities and park operations from areas of the park, reducing noise and traffic.

Expansion of the existing hiker shuttle and implementation of the long-term visitor transportation system would resolve many of the existing parking problems. The visitor transportation would not be mandatory, so visitors wishing to remain in their vehicles could continue to experience the park on their own. Reconfiguring the Echo Canyon and Massai Point parking lots would increase the parking capacity at the park by 50 spaces, lessening congestion.

### **Impacts of Alternative B**

Impacts on visitor experience would be exactly the same as those for Alternative A except that inadequate visitor orientation facilities would remain. Also, landscape treatment would be curtailed in favor of employing funding resources on restoration work inside structures. This would hinder visitor experience of a more historically accurate landscape and require additional interpretive techniques to help visitors picture landscapes of the past.



### **Impacts of the No-Action Alternative**

The primary park road and first picnic area are important for visitors, in terms of providing a range of ways to tour the monument (drive, hike, horse use, picnicking, reading wayside exhibits) and view monument physical resources, including a special birding area. Because of its narrow width, lack of shoulders, and tight turn radii, the road is inadequate for the large recreation vehicles and buses that use it today, which use is increasing. There are no legal passing zones and only a few places where a slow or large vehicle can pull over to allow others to pass. As a result, large recreation vehicles, which tend to move slowly on the winding road, hold back other vehicles. The problem becomes acute when two such vehicles pass in opposite directions, filling the entire road. Clearly, being caught behind such a slow-moving, view-blocking vehicle is frustrating and could become a potentially dangerous introduction to the park should the following vehicle attempt to pass.

The major parking locations at Faraway Ranch, the visitor center, Sugarloaf Mountain, Echo Canyon, and Massai Point have serious, but not yet acute, parking problems. The dead end road, with its very limited parking at major points of interest, imposes a definite limit on the number of vehicles that the entire park can accommodate at one time. Driving back and forth, fruitlessly looking for a parking spot and perhaps finding one at a place where they did not want to stop reduces a visitor's pleasure, as does waiting behind an idling vehicle. With only an estimated 190 spaces parkwide, parking is often inadequate during the high visitation months of March, April, and May. The visitor center parking area, which also serves as a trailhead for the entire system of trails in Rhyolite Canyon and Bonita Creek drainage, is so small (approximately 20 spaces) that it causes the greatest parking problem in the park. Some trailheads have only a few or no parking spaces. When large recreation vehicles and trailers park, they commonly occupy two or

more spaces, compounding the shortage of space.

Parking problems degrade both the hikers' and the sightseers' visitor experience in the monument. When visitors have to park illegally, they cut their stay at the monument short. If parked illegally, hikers on the weekdays will leave two hours earlier than hikers parked legally. If parking is not legally available at Echo Canyon, weekday sightseers will leave 25 minutes early. On the weekends, sightseers will leave 10 minutes earlier than normal if illegally parked at Massai Point and 21 minutes earlier than normal if illegally parked at Echo Canyon (NPS 1999).

Visitors are able to tour the historic Faraway Ranch, including house tours, seeing part of the museum collection, and viewing the historic scene with its many landscape features. They can use the rest room and picnic area. Visitor expectations for level of encounter with other visitors ranges from comfort in large groups to waiting until after regular visitor hours to tour the district in relative solitude.

The park has an administrative use area where excess materials and equipment are stored. Use of this area to support park operations has a negative effect on visitor experience in terms of air quality, noise, and traffic.

The visitor center is critical for visitor experience and information acquisition. Crowding can be expected. Parking can be exceeded on busiest days. Here hikers can also use the hiker shuttle that drops hikers at the upper parking lots and permits them to walk back to the visitor center. Accessible facilities provide for those visitors with special access needs. This is generally the location where emergency services are provided.

Depending on the time of year and the day of the week, the campground can be very quiet or completely filled and boisterous. Visitors who use the campground generally report an outstanding camping experience.

Sugarloaf, Echo Canyon, and Massai Point are the most popular of the trailheads, and the destination of many hikers. There are also vault toilets, wayside exhibits, and picnic facilities at each of these three areas.

Visitors take the wilderness with varying degrees of effort. It is possible to walk for only several minutes and have experienced the Chiricahua NM wilderness. Others hike for hours. Except for the busiest periods, and with the exception of the Echo Loop, there is a measure of solitude and separation from other hikers along most trail segments. Visitors often see wildlife and the abundant plant life while hiking in the wilderness. Here also, the primary park features, the pinnacles and spires, can be seen at close range. This is the essence of the Chiricahua experience.

## **ARCHEOLOGICAL RESOURCES**

### **Affected Environment**

The archeology of the park is poorly known. Prehistory includes evidence of the Archaic period Cochise Culture and the San Simon Branch of the Mogollon Culture. The San Simon Branch was influenced by the Hohokam between A.D. 300 and 1200 and by the Salado after A.D. 1200. The Chiricahua Apache were present in these mountains from the late seventeenth century through the nineteenth century.

Only 3% of the park has been inventoried, and a full archeological survey of the monument has been proposed. The survey will be stratified by landform, with intensive survey of the low areas and ridgelines and a sample survey of steeper terrain.

### **Impacts of Proposed GMP— Alternative A**

The proposed alternative calls for a new combined headquarters/visitor orientation facility outside the park boundaries. This alternative would be beneficial because the interpretation center could serve to educate the public on archeological and historical resources at the park. Inventory within the area of potential effect could increase the

knowledge of historic and prehistoric sites in the monument vicinity that in turn would allow the park to better interpret the park resources for visitors.

If the King of Lead Mine would be acquired and the park boundary extended to include it, the archeological resources within the newly acquired property would be inventoried and evaluated.

Other proposals include

- 1) replacement of the campground septic system,
- 2) extending the water system from the Faraway main visitor center/housing area to the parking lot,
- 3) enlarging the two-way trail from the Faraway Ranch house into a loop trail starting and ending at the parking area,
- 4) making the trail along Bonita Creek from the picnic area to the Stafford Cabin handicapped accessible,
- 1) moving stored items from the “boneyard” and then restoring the area to its natural condition, and
- 2) implementing improvements at Massai Point, Echo Canyon parking/trailhead, and Sugarloaf developed areas. Archeological survey necessary to perform §106 compliance for the proposed alternatives would contribute toward the goal of completing an archeological inventory at Chiricahua National Monument.

## **Impacts of Alternative B**

Impacts on archeological resources would be exactly the same as those for Alternative A, except that only an administrative facility would be located outside the park. Impacts associated with retaining the existing visitor orientation facility and methods are described in the no-action alternative.

## **Impacts of No-Action Alternative**

Under the no-action alternative, most of the known archeological resources would not be impacted. The boneyard area has not been inventoried, and archeological sites may be buried there. Continued use of this area as a boneyard may adversely affect possible sites. Archeological inventory and

§106 consultation would be required for the no-action alternative.

## **CULTURAL LANDSCAPES AND HISTORIC RESOURCES**

### **Affected Environment**

Two historic landscapes have been identified so far within Chiricahua NM. The Faraway Ranch is a historic vernacular landscape of approximately 215 acres, which is designated as a historic district. This landscape was inventoried (NPS 1997), and significant landscape characteristics include overall spatial organization of the ranching complex as well as individual vegetation features such as the orchard remains, circulation features such as roads and the foot bridge, and structural features such as irrigation ditches and the swimming pool.

The Civilian Conservation Corps-designed landscape was not inventoried. Likely significant characteristics of this landscape include patterns of spatial organization and circulation, construction and planting design principles and use of materials characteristic of this period, and specific associated features, for example the visitor center, maintenance and housing complexes, the 14-mile trail network, and the various walkways, and walls and structures at the overlooks. Until the inventory is completed, all landscape patterns and features associated with CCC activity will need to be managed as potentially National Register-eligible resources.

It is possible that additional landscape resources (including ethnographic landscapes) would be identified in the remaining areas of the park as inventory work is completed.

The List of Classified Structures (LCS) for Chiricahua National Monument, approved in 1995, includes 61 structures that are listed on, or have been determined eligible for listing on, the National Register of Historic Places. The list includes two principal and



distinct types of buildings. One major set of structures is associated with the Faraway Ranch and were built in support of cattle and, later, guest ranching activities by the Stafford, Erickson, and Riggs families. The other major set of structures was built by the CCC, in support of federal government (USFS and later NPS) activities. In addition, the LCS includes various other features, such as the Massai Point Road, hiking trails, grave markers, creek dams, and stone masonry retaining walls.

The park has 15,000 items in storage on site. The park facilities consist of the historic Faraway historic house, which has very limited climatic controls. A few items are housed in a 10' x 10' storage building in the maintenance area, which does have climatic controls but lacks any fire or intrusion alarm system. An additional 65,000 items are in storage at the Western Archeological Center in Tucson.

The Faraway Ranch Historic District was entered on the National Register in 1980. The nomination describes 24 features associated with the ranch as contributing to the significance of the district. These range in scale and complexity from a deteriorated concrete water trough to the main ranch house. The ranch district has significance in the areas of archeology, frontier settlement, historic agriculture, cattle and guest ranching, architecture, conservation, immigrant history, and women's history, with the Erickson family and Lillian Riggs as examples. The district is associated with events that made a significant contribution to the broad patterns of our history, including European settlement; conflicts between the Apaches, Anglo settlers, and military; the end of the frontier; and the conservation movement, through the national forests and the national monuments.

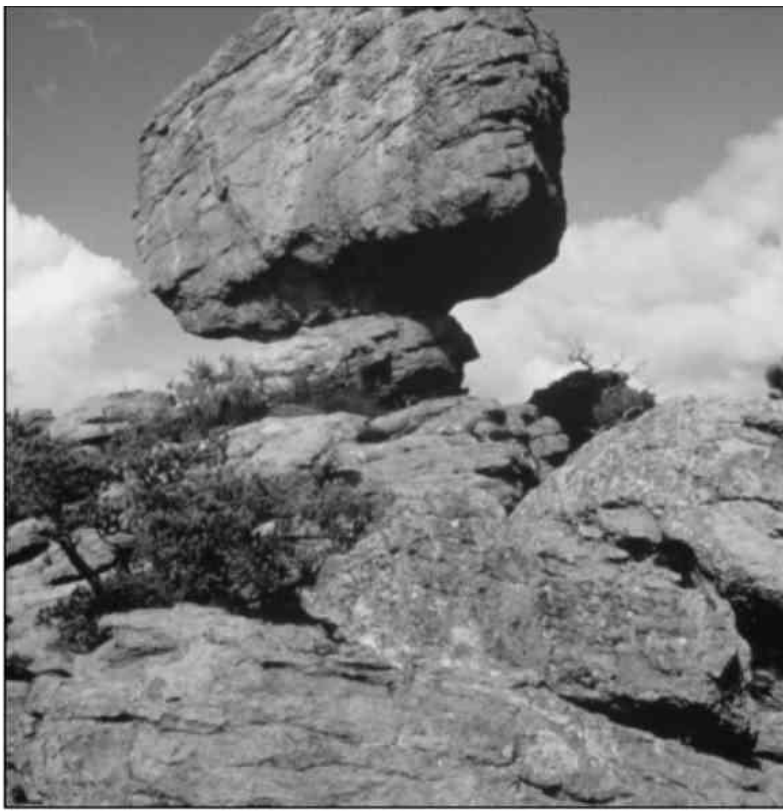
In addition to settlement and ranching history, the Faraway Ranch Historic District also contains the site of the U.S. Army "Camp at Bonita Canyon." This was a cavalry camp established during the

Geronimo Campaign to deny the Apaches water in Bonita Canyon, as well as use of the canyon as a travel route through the Chiricahua Mountains. The camp was established and garrisoned by elements of the 10<sup>th</sup> U.S. Cavalry, a regiment of black enlisted men with white officers.

A draft National Register nomination form for 14 CCC buildings was prepared in 1994, but the draft was never approved and needs revision. Associated retaining walls, steps, the Massai Point Road, hiking trails, and other landscape features have since been determined to be eligible parts of the CCC district. They were designed by the NPS Branch of Plans and Designs, according to the principles of rustic design. They are the results of intensive planning and construction efforts, in the years 1916 to 1942. These structures illustrate the development of facilities at Chiricahua and are good examples of the quality of craftsmanship typical of the work of CCC crews throughout the country.

These buildings are scattered throughout the national monument. In the headquarters area, the buildings include the visitor center, two employee residences, and several maintenance facilities. CCC buildings outside of the headquarters area include a comfort station and residence in the campground, an orientation station at Massai Point, and a fire lookout on Sugarloaf Mountain. The buildings and site features were constructed using oversized, heavy, rock masonry walls, with pitched roofs covered with cedar shingles. Both shingles and gable end boards were darkened with a creosote stain. Thirteen of the buildings have a single-story design in a rustic style of coursed and uncoursed stone set in mortar. Most of the buildings are in a wooded setting and thus the building style blends with the setting.

The CCC was also responsible for significant upgrades to the Massai Point Road. The road was originally built by USFS or local residents, when the monument lands were still part of Coronado



National Forest. The road was upgraded and oiled by the CCC in time for the dedication ceremonies in October 1934. Later, a significant amount of road improvement work was done by the CCC as a separate project. This work consisted of the construction of numerous retaining walls and culvert headwalls, as well as regrading, cutting, and filling. The road is the primary means for visitors to experience the park, and its improvement was a key element of the development plan for the monument.

A network of trails was also built by members of the CCC, during the six years they worked at Chiricahua and the adjoining Coronado National Forest. Construction of the trails and other structures required extensive blasting and masonry skills. Some of the trails were originally made by Ed Riggs, as part of his efforts to open the area to visitors, and were formalized by the CCC. They are a good example of the quality craftsmanship typical of the trail work of the CCC crews throughout the country.

### **Impacts of Proposed GMP— Alternative A**

The preservation of visual quality within the park and working with adjacent landowners to minimize modern intrusions on park viewsheds would benefit the experience of

those visiting and hiking within the park and would retain the less-developed, more historic views from identified historic landscapes within the park.

At Faraway Ranch, the proposed GMP would make some changes to reduce the administrative use of the buildings. These changes include the removal of office, conference room, and collection storage functions from the site. The park would then rehabilitate these areas and provide additional interpretation and visitation opportunities. This would improve the condition of the buildings, reduce the

number of government vehicles parked on the grounds, and provide the visitor with a richer experience.

All buildings and facilities open to the public would be made accessible to mobility impaired visitors. This would require some modification to existing entryways but would enable people with mobility impairments to experience the interior of additional buildings.

The Faraway historic vernacular landscape and CCC historic designed landscape areas would continue to be managed as historic landscape resources, and modifications for visitor safety and accessibility would be made so as not to reduce the integrity of these areas. Maintaining the integrity of all Faraway landscape areas and features would result in no adverse effect on this landscape. The integrity of the CCC areas' design principles and use of materials would also be maintained, preserving those resources as well and resulting in no adverse effect.

The visitor circulation pattern around the site would be rearranged so that visitors walk from the parking lot more directly to the main ranch house, using a route that follows the original road to the house. The visitors would return to the parking lot by way of the

existing trail by the corrals. This circulation change would provide a more historically accurate and attractive approach to the ranch without adversely impacting the historic structures or cultural landscape.

Several CCC structures in the headquarters area would undergo significant changes in use. The visitor center and administration building would be converted to an environmental education center. The maintenance area would see a reduction in use because of the relocation of many maintenance activities to the proposed new headquarters/visitor orientation facility area. Nonhistoric structures in the maintenance area, such as the facility managers office, would be removed. These changes would result in reduced developmental pressure on both the buildings and the surrounding cultural landscape. In addition, the less intensive use of these buildings, combined with continuing preservation maintenance, would prolong their life.

The campground area would remain much as it is although handicapped accessibility would be improved and utilities would be put underground. The handicapped accessibility modifications would be made so as not adversely affect the historic structures or cultural landscape. The underground placement of the utilities would have a beneficial effect on the setting.

The CCC-built Massai Point Road would be maintained essentially as it is. The road would be repaved but no widening or straightening would take place. The size and number of vehicles might need to be limited in order to preserve the experience of the road and ensure safety. Some vista clearing along the road would take place in order to expose rock formations that were once visible but are now obscured by vegetation. These measures will have the effect of restoring, in the case of the vistas, and preserving, in the case of the road character, the original experience of driving the park road. The proposed developments would be done in such a way as to be compatible with the significant CCC

landscape elements (which will be determined by the cultural landscape inventory) so as not to reduce the integrity of the overall CCC landscape.

The Massai Point exhibit building would be made handicapped accessible. This will enable mobility impaired visitors to experience some of the finest vistas in the park. The handicapped accessible trail to the exhibit building will be built over presently existing social trails with the result that the effect on the cultural landscape would be minimal. The ramp necessary to enter the building would be constructed in a reversible manner so that the effect would not be adverse. The new exhibits in the building would be installed so as to have no adverse effect on the structure.

The CCC-built trails would be maintained as they are with no adverse effect on their integrity.

### **Impacts of Alternative B**

Impacts on cultural landscapes and historic resources would be exactly the same as those for Alternative A, except that only an administrative facility would be located outside the park. Impacts associated with retaining inadequate visitor orientation facilities visitor orientation facility and methods are described in the no-action alternative.

Landscape treatment would be curtailed in favor of employing funding resources on restoration work inside structures. Therefore, beneficial work describe under Alternative A relating to restoring a cultural landscape would not be completed in this alternative. This would hinder visitor experience of a more historically accurate landscape and require additional interpretive techniques to help visitors picture landscapes of the past. Impacts associated with existing conditions of both the lack of adequate visitor orientation and landscape treatments are outlined in the no-action alternative.

## **Impacts of the No-Action Alternative**

The Faraway historic vernacular landscape and CCC historic designed landscape areas would continue to be managed as historic landscape resources, and any modifications would be made so as not to reduce the integrity of these areas. Maintaining the integrity of all Faraway landscape areas and features would result in no adverse effect on this landscape. The integrity of the CCC area design principles and use of materials would also be maintained, preserving those resources as well and resulting in no adverse effect.

Without restoration of landscape structures, the condition of landscape and house interior would continue to be very different and interpretation would be needed to explain this.

At the present time, buildings at Faraway Ranch are used for a variety of purposes. In addition to preservation of the resource, these include interpretation, office space, conference room, collection storage, and a maintenance area. The main ranch house underwent major restoration in 1988, but most of the other buildings have received far less attention and are now in fair or poor condition, according to the List of Classified Structures (LCS). Lack of funding has prevented park staff from giving some structures the attention they deserve. The no-action alternative would perpetuate the situation where some structures, such as the main ranch house, are in good condition, and other structures, such as the corrals, are in poor condition. This contrast in levels of preservation treatment is obvious to the visitor. The no-action alternative would result in a continuing loss of integrity for some resources if funding could not be obtained for preservation maintenance. In addition, the no-action alternative would continue the use of several historic structures for inappropriate purposes, such as collection storage and office space. These structures do not adequately meet the need for collection storage and office space, and their use as

such prevents them from being appropriately interpreted and open to the public.

Continued overuse of this visitor center/headquarters area, which is part of the historic CCC designed landscape, may reduce the integrity of this area, either indirectly (general wear and tear) or directly (future proposals for additional development or modifications).

Most of the CCC structures still serve their original purpose, although all have undergone some modification over the years. The no-action alternative would likely result in the continued incremental alteration of these historic structures as modifications are made to adapt the buildings to contemporary administrative and maintenance needs. These inevitable incremental changes, cumulatively over time, contribute to the loss of the integrity of the structures and their settings.

The CCC-built Massai Point Road and hiking trails are in good condition, according to the LCS. The no-action alternative would not affect the physical integrity of the road and trails. However, the vehicle congestion that sometimes occurs along the road and at parking areas would not be addressed. This would result in diminished visitor experience.

## **LONG-TERM HEALTH OF NATURAL ECOSYSTEMS**

### **Affected Environment— *Physiography/Geology/Soils/Climate***

Chiricahua lies within the Mexican Highland portion of the Basin and Range Physiographic Province, between the Colorado Plateau and the Sierra Madre. The monument occupies a relatively low area in the northwest portion of the Chiricahua Mountains, with an elevational range from 5,150 feet along the west boundary to 7,825 feet at the northern boundary. The 11,985 acres within the monument are framed by an irregular boundary based primarily on political land

lines, with only the northern boundary following a landform. Bonita Creek and Rhyolite Creek are the principal watersheds within the monument and drain the majority of the area. Most of the monument is dominated by very steep terrain, near vertical to vertical cliffs, and escarpments.

The monument is in an area that was impacted by the Turkey Creek caldera approximately 27 million years ago. Rhyolitic ash was deposited in three separate, cataclysmic eruption and volcanic events. Ash fall and surge deposits were up to 1,400 feet in thickness in some areas. Subsequent erosion and weathering produced columns and pinnacles in rocks that are strongly jointed. In places, there are cliffs higher than 100 feet. Sloping areas are characterized by landslides and debris flows. A dacite lava flow remnant from a later eruption is exposed as the summit of Sugarloaf Mountain.

Soils range from very shallow “new” soils only a few inches deep on ridges and summits to more than a dozen feet deep along lower drainage bottoms. Differing areas of the monument with different parent material have formed different soils, and a 1996 soil survey identified 24 soil units within the monument. Soils based on Rhyolitic parent material tend to be acidic and less productive than other soils, such as those from limestone parent material.

Climate of the area is semiarid with low rainfall, relatively high temperatures and evaporation, and low humidity. There is a distinct bimodal precipitation pattern, with wet winters and summers and a pronounced spring-early summer drought period. Winter moisture tends to exceed summer rainfall, which comes in the form of thunderstorms, as moist air masses move in from the southeast. Winter storms bring moisture generally from northwest frontal systems. Late summer to early fall tropical storms from the Pacific can bring substantial rainfall and flooding. Temperatures rise through the spring, peaking in late June and early July just as the monsoon season

starts. Lowest average temperatures are in January.

### **Affected Environment—Vegetation**

Vegetation of the monument is diverse with a high degree of biotic complexity. This is also a consequence of the presence of a broad range of temperature, precipitation, elevation, topography, soil, and fire regimes. The monument is in a region of complex intermingling of floristic elements from the Rocky Mountains to the north, Sonoran and Chihuahuan Deserts, and Madrean evergreen woodlands to the south.

A total of 687 vascular plant species has been recorded, with a mix of 11 vegetation associations providing habitat for an equally diverse wildlife collection. Major plant associations are:

- Madrean evergreen woodland, found throughout the monument, and generally subdivided into Mexican oak-pine woodland, open oak woodland (savanna), and riparian oak woodland. This association makes up 65% of the monument, ranging from upland slopes and mesas where ponderosa, Apache, and Chihuahua pines dominate, to south-facing slopes in lower canyons, where Emory and Arizona white oak dominate, and riparian bottoms in lower sections of Rhyolite Canyon.
- Interior chaparral, composed of evergreen species such as point-leaf manzanita, Toumey oak, Arizona white oak, pinyon pine, and alligator juniper and found in a mosaic pattern throughout the Mexican pine-oak-woodland.
- Semi-desert grassland, found on the lower, west-facing slopes, characterized by native cool and warm-season grasses. Some of these areas have been converted partly to mixed grass-scrub stands, possibly by a combination of the absence of wildfire or climate change.
- Montane conifer forest, found on wetter, north facing slopes and canyon bottoms at higher elevations. These are either pure ponderosa pine stands, or have an overstory of pine and Douglas fir with an oak understory.
- Relict conifer forest, dominated by Arizona cypress are found along canyon bottoms.

These stands seem to be controlled and perpetuated by the presence or absence of events such as flood or fire.

### **Affected Environment—Wildlife**

The variety of habitat types within the site contributes significantly to the faunal diversity. A total of 8 species of amphibian, 46 species of reptiles, 71 species of mammals, and 171 species of birds either have been documented or are expected to occur. The only survey work completed to date was a small mammal inventory done between 1984 and 1986 (published in 1990) by Douglas Duncan. Single-focus studies have looked at a variety of animals, including coati, javelina, fox squirrel, and Mexican jays. Two years of a bird banding project have been conducted.

Animals are attracted by the abundant niches, relatively rich food source, and reliable water in the five springs found in the monument. Mammals include mountain lion, black bear, whitetail deer, coatimundi, ringtail, skunk, collared peccary, coyote, gray fox, black-tailed jackrabbit, desert cottontail, white-throated woodrat, Merriam's kangaroo rat, rock squirrel, cliff chipmunk, fox squirrel, desert shrew, long-tongued bat, and lesser long-nosed bat.

Among the 171 bird species found in the historic site include 9 hummingbird species, 10 hawk species, 3 falcons, 8 owls, 17 flycatcher species, 5 wrens, 5 swallows, and 8 woodpecker species.

The desert grasslands support a variety of amphibians and reptiles. Those recorded include tiger salamander, southern spadefoot toad, Great Plains toad, canyon treefrog, western box turtle, Texas horned lizard, mountain and Clark spiny lizards, Chihuahuan spotted whiptail, Madrean alligator lizard, rock rattlesnake, twin-spotted rattlesnake, Mojave rattlesnake, and western coral snake.

No fish species are found at Chiricahua National Monument.

### **Affected Environment—Threatened and Endangered Species**

The area along the Arizona, New Mexico, and Mexico border is rich in biodiversity. This area contains species that have been adversely affected by human activities, including grazing, hunting, farming, wood gathering, fire suppression, mining, water diversion, groundwater withdrawal, and general development. The only survey that has been conducted in the monument was for small mammals, and that was limited in its scope. Two federally listed threatened and endangered species have been identified as being either historically or currently present in the monument:

- American peregrine falcon (*Falco peregrinus anatum*), endangered.
- Mexican Spotted owl (*Strix occidentalis lucida*), threatened.
- Northern goshawk (*Accipiter gentilis*), which may soon be listed by the Fish and Wildlife Service (FWS), has been identified within the monument.

Surveys have not been conducted for the following species in the monument, nor have they been previously identified there, but there is habitat that could support them.

- Jaguarundi (*Felis yagouaroundi tolteca*). The FWS list of endangered and threatened wildlife lists the jaguarundi as endangered, and there have been several recent, unconfirmed reports of this small cat have occurred at the monument and at Fort Bowie.
- Jaguar (*Panthera onca*), endangered; recent sightings along the Mexico border 50 miles to the south, and one was killed 20 miles to the northwest in the mid-1980s.
- Lesser long-nose bat (*Leptonycteris curasoae yerbabuenae*), endangered; individuals seen at hummingbird feeders in the monument, and two roosting sites confirmed within 5 miles to the southeast.
- Chiricahua leopard frog (*Rana chiricahuensis*). This candidate species is found in the Chiricahua Mountains to the south.

- New Mexican ridge-nosed rattlesnake (*Crotalus willardi obscurus*). Threatened; found 5 miles to the south.

### **Affected Environment—Floodplains**

No permanent, perennial flowing streams exist within the site. During the summer monsoon season, and at times during heavy winter rain or snowfall, intermittent and ephemeral streams can carry large volumes of runoff for brief periods. Bonita Creek and Rhyolite Creek form the two main drainages and watersheds, and together drain the majority of the monument. Picket and Little Picket Canyons drain to the west, and Jesse James and Little Jesse drain to the south into Pinery Canyon.

Several of these creeks contain features that define riparian areas. These include vegetation such as Arizona sycamore, willow, cottonwood, and walnut. Specialized soils, the presence of water, and certain faunal species also define riparian areas. Riparian areas, while only contributing a small percent of the land area of the southwest, support a disproportionately large array of the entire faunal makeup of upper and lower desert areas. These areas within the monument are critical to the resident wildlife populations, and to migrating animals as well.

In August 1993, an eastern Pacific hurricane crossed into the Mexican highlands and stalled over southeast Arizona. Following on the heels of a wet month, the rainfall from this storm produced a 500-year flood event in Rhyolite Canyon, with estimated discharge flows of 3,250 cubic feet per second (cfs). Bonita Creek, just below the monument's campground, had an estimated discharge of 600 cfs. After the confluence of Rhyolite and Bonita Creeks the discharge flow was slightly above the calculated 100-year flood event and was approximately 3,500-4,000 cfs. The rapid flood damaged the campground, visitor center parking lot and road crossing, trail bridges across the creek at several locations, and the road to the superintendent's house. Flood water crept

right up to some of the Faraway historic structures and flooded the entrance meadows.

### **Affected Environment—Air Quality and Night Sky**

Chiricahua NM is classified as a Class I attainment area. Monument staff have been sampling and monitoring air quality since the late 1980s. This monitoring has shown the air to be relatively free from elements contributing to reduced air quality and visibility. Emissions from large nearby and regional emission sources are measured at the monument. A 1996 study of lichens as bioindicators of air quality (St. Clair) indicates that there is good air quality within the site. Lichens accumulate and store elements in much the same way that filter-feeding shellfish store pollutants in the ocean. Analysis of this data also reveals the presence of periodic chemicals and particulates from coal-fired generating stations within the region, including from as far away as Mexico and southern Texas. With the closing of the Douglas copper smelter located 50 miles away, a measurable improvement was noted. Air quality can also be adversely affected by wind events that transport dust from the huge Willcox Playa across Apache Pass, and by occasional wildland fires or prescribed fires in the area. The general wind patterns bring regional air mass movement from the southwest and tend to support better air quality in the winter months than in the summer months.

Visitors have long come to the monument to view the unexcelled night sky. Massai Point parking area is an ideal place to view celestial events as well as enjoy casual, nightly sky viewing. Being readily accessible by vehicle, in an area with relatively clear air, at an elevation of 6,800 feet, and with no community larger than 7,000 residents within 65 miles or other large light sources nearby, this location provides a special setting from which to enjoy the night sky.

### **Affected Environment—*Scenic Vistas from Within and Outside***

Much of visitor viewing within the monument, whether done on foot or through a windshield, is on an intimate scale—visitor center exhibits, wildlife, flowers, flowing streams, CCC architecture, or historic structures and their setting at Faraway Ranch. The horizon of interest for these visitors, at those moments, is relatively short and near at hand. For those who drive to the upper parking lots, and for hikers who walk along the wilderness trails, the monument takes on a different scale and setting. Long-range vistas in all directions provide sweeping panoramas: the Rincon Mountains as far as Tucson to the west, Cochise Head to the north, the taller Chiricahua Mountain peaks to the south, and the Basin and Range uplift mountains into New Mexico to the east. Sunrises and sunsets spread out from one's feet away to the curve of the earth. Visitors can watch a fascinating display of changing shadows among the rock pinnacles as the sun changes location in the sky. From these higher vantage points, the pinnacles within the monument can be readily seen. But almost the entire backdrop resides outside the monument.

### **Affected Environment—*Wilderness Values***

The 1974 legislation that created wilderness areas and a system to hold them in the United States was responsible for ultimately designating 10,280 acres, or 86% of the total area, within Chiricahua National Monument as wilderness. Designed to be part of the larger wilderness system, this relatively small patch of wilderness contains a magnificent natural landscape and a bewildering array of plants and animals nearly untouched by human presence. The Chiricahua NM wilderness area is easily accessible, so visitors need not invest much in the way of time, money, or effort to visit it. A visitor traveling from a large urban area such as Tucson or Phoenix can step out of the vehicle after a comfortable, high-speed

drive, and place their next, street-shoed step in wilderness. Lacking proper clothing, supplies, or guidance, these individuals do regularly clamber around the hiking trails in the monument. Many of the visitors are far more comfortable in urban parks and expect some of that same experience when they visit the monument. Many are unlikely, due to age or lifestyle, to tackle the wilder, more remote wilderness areas, or even the Chiricahua wilderness area 10 miles to the south, managed by the Coronado National Forest and three times the size of the monument. The monument gives them an area they can safely visit, but still count themselves among those that hike in wilderness.

Chiricahua also gets its share of experienced hikers and wilderness users. The more heavily used trails such as the Echo Loop tend to be crowded on weekends and during busier times of year. But there are other trails with fewer hikers where a sense of aloneness and solitude can be found. Trails have adequate surfaces, are wide, and follow the more gentle slopes and contours. In this very rugged landscape with rocks and ledges and thick vegetation, hiking the formal trails is a pleasure.

### **Affected Environment—*Ability to Hear Natural Sounds***

The monument is in the relatively remote northern Chiricahua Mountains, and along the eastern reach of Sulfur Springs Valley to the west, itself relatively remote and lightly populated. The only road into the monument is a dead end. The lowland area just west of the monument is lightly traveled, generally by site visitors and local ranchers, and there is no heavy industry or other human activity to generate sound to disturb the natural quiet of the site. Only visitor and staff road traffic and occasional maintenance and resource projects by the site staff provide sources of noise that would be anomalous with the remote nature of the area. Some of these projects, such as mechanical fuel reduction or road edge tree pruning, can



generate disruptive sounds for prolonged periods, generally within the road corridor area. The loudest sounds come from occasional aircraft passing low over the monument. Visitors generally spend at least some time away from their vehicles, hiking along all or parts of the 19 miles of trails. They engage in low-key activities such as bird-watching, photography, and hiking that do not tend to generate sounds that would disrupt other visitors. Dogs are not allowed on most of the trails. There are areas in the monument, however, where noise is generated. These include the maintenance yard and housing area, picnic areas associated with parking lots, and the campground. Visitors and staff engage in more frequent, and louder, activities in these areas.

Many visitors report that they find the solitude at the monument important and desirable. The isolated and relatively wild site is conducive to listening to the sounds of wildlife, wind through the trees, cascade of rocks down a slope, or the trickle of water flowing during the wetter periods. This ability to freely hear natural sounds is an important component of a visitor's experience, especially in the wilderness. Any sounds that make the visitor aware of modern activity are disruptive and serve to diminish the quality and integrity of their visit.

### **Impacts of Proposed GMP— Alternative A**

Environmental impacts of the primary park road and first picnic area would be the same as with the existing use. Vista clearing would remove some trees and brush that might provide habitat for wildlife, although this effect would be very localized. Chain saw use would also disturb wildlife and interfere with the ability to hear natural sounds. Implementation of certain management actions such as a shuttle system would serve to reduce the total number of vehicles driving the road and would be a positive effect for wildlife, air quality, and the ability to hear natural

sounds. On the other hand, current use is limited by the finite number of parking spaces. Implementation of a shuttle system could actually deliver more visitors to trailheads and picnic areas, creating greater negative human impacts to the natural ecosystem at those sites and along the wilderness trails.

Eliminating offices and collection storage at Faraway Ranch would have a positive effect by reducing occupation of several historic structures, and subsequent staff traffic, parking, food presence, and so on.

Implementation of a vegetation management program could actually serve to provide a more faithful, natural vegetative landscape than currently exists. Historic photographs from the 1880s in Lower Bonita Canyon show a much more open landscape than currently exists. This is consistent with west-facing drainages in the Chiricahua Mountains and other "sky islands" and is believed to be primarily the result of the combined effects of cattle grazing and fire suppression during this 100-year period. Creeks once flowed much more frequently in these drainages than they do now, even though precipitation patterns are similar. This is also a probable result of the increased vegetation now growing in the canyons. Specific effects of the proposed GMP will depend on the findings of additional vegetation and historic landscape studies, in support of the landscape and fire management programs. We do know that the Erickson and Riggs families planted extensive fruit orchards to both the east and west of the ranch complex and raised fruit crops for their own use and for sale to the military and others. Aside from the small representative cluster of fruit trees planted in 1994 in the ranch house yard, no attempts will be made to expand this program to replicate the earlier orchard operation. Park staff would reduce the number of encroaching trees growing in the formerly open area between the ranch house and the Stafford Cabin. This would provide a more accurate historical scene for visitors and restore the canyon to a more

natural vegetation composition. It would also assist with control of the 65 exotic plant species that have been identified in the monument, most of which are in the historic district. This would also provide more options for reducing hazard fuels and restoring a more natural fire regime.

The subsequent reduction in the extent of exotic plants and a return to a more natural environment would favor native wildlife by providing increased native food source and habitat. There would be a slight contribution to a return to a more natural hydrologic condition because a reduction in woody vegetation increases water availability for surface flow. Soils and natural sounds should be unaffected by this alternative. These impacts are local in nature and relatively moderate in severity.

Rearranging visitor circulation foot traffic would reduce harmful foot traffic into the stock watering tank and windmill near the tack barn, eliminating social trails.

Moving the boneyard to a more appropriate location would eliminate all the negative environmental and visitor impacts presently encountered in the present location. This would depend, however, on where the boneyard is relocated. Placement in any other site within the monument would result in many of the same effects, except that relocation within the monument but outside the wilderness would be more beneficial than the current situation. Relocation of this function outside the monument would provide the most benefit.

Construction of a new headquarters/visitor orientation facility and administrative facility outside of the monument and conversion of the existing visitor center to an environmental education center would provide positive environmental effects. Although it would not totally eliminate the negative effects discussed in the current alternative, reducing the amount of human traffic and presence at this location would correspondingly reduce these negative impacts.

Removal of some of the maintenance operation from the housing and maintenance area would reduce the overall negative environmental effects. But continued use of the area for housing, parking, warehouse, fire cache, rescue/EMS cache, and offices would maintain many of the same impacts as the current use. Undergrounding utilities would have a positive effect by reducing their visual presence and any negative impacts to wildlife they may pose. However, there would be a short-term negative impact during the undergrounding process. This would include erosion, soil disturbance, and some vegetation cutting. This process would disrupt wildlife and interfere with the ability to hear natural sounds.

Impacts of the superintendent's house and access road would be the same as in no-action alternative.

In this proposal, NPS would improve safety to monument staff and visitors from the threat of flash flooding. The park would continue to operate the existing 25-site campground in the floodplain at Chiricahua. Selective closure options described in an operational plan (campground operation plan) would significantly lower the threat to life and property within the campground area. The monument would develop this plan, regularly educate staff and visitors in its detail, and periodically review it with any additional relative weather or flooding information that becomes available.

The risk to human life in the campground cannot be eliminated entirely. If the campground is damaged in future flooding or, as additional camping facilities are developed outside the monument by private parties, the monument staff would consider closing all or part of the Bonita Creek campground on a seasonal or entire basis or converting it to day use picnicking only.

Effects from the campground would be the same as in the no-action alternative, except that putting utilities underground would reduce their visual presence and any negative impacts to wildlife they may pose.

However, there would be a short-term negative impact during the undergrounding process. This would include erosion, soil disturbance, and some vegetation cutting. This process would disrupt wildlife and interfere with the ability to hear natural sounds.

Adoption of the proposed alternative that includes purchase of the King of Lead Mine private property, mine site rehabilitation, and conversion of the road to a hiking trail would provide important long-term positive environmental effects. These include preserving an important viewshed, eliminating the potential for further contamination and pollution from mining activities; and eliminating the use of this road that cuts through the monument wilderness. There would be some negative effects during the actual rehabilitation process that would have to be mitigated. These would include soil erosion, heavy equipment noise, wildlife disruptions, air quality degradation, and possibly cutting of some vegetation. Mitigation could include scheduling work during slower visitor periods and when wildlife disruptions would be fewest; using soil loss abatement procedures; getting additional soil and fill material from compatible sources; and collecting and using native seed sources to protect genetic material during reseeding.

Also, low levels of cadmium and lead have been detected in the soils at the King of Lead Mine. Pursuant to USDI policy, the NPS would not purchase the property until it has been certified as safe for the uses proposed.

Impacts at the Sugarloaf, Echo Canyon, and Massai areas would be the same as described for the no-action alternative, except that vista clearing would provide temporary noise and wildlife disruptions and remove a relatively small amount of vegetation. This would be a minor, negative environmental impact to a very small area.

Effects on wilderness are the same as described for the no-action alternative. Incorporating the King of Lead Mine and its

dirt access road into the monument wilderness would serve to protect and improve the integrity and size of the wilderness.

In this alternative, construction of a new headquarters/visitor orientation facility including all administrative offices, maintenance storage area, collections storage, central sewage system, and transportation origination area, outside the entrance to the monument on private land would provide environmental benefits to those former areas within the monument. There would be reduced wildlife disturbance, less noise, and improved air quality because of fewer vehicles operating on the park road and relocation of maintenance operations. On the private land where these facilities would be built, there would be additional disturbance, including soil compaction, loss of vegetative cover, alteration of any wildlife use, and increased noise and reduced air quality in the immediate area, primarily because of the concentration of vehicles.

### **Impacts of Alternative B**

Impacts on long-term health of ecosystems would be the same as those for Alternative A, except that because the natural system would not be manipulated to cultural landscape specification there would be no impact, and natural systems would be healthier. Impacts associated with retaining inadequate visitor orientation facilities and methods are described in the no-action alternative.

### **Impacts of No-Action Alternative**

The current situation, with the paved road, picnic area, and parking areas, causes modifications in the natural water sheetflow patterns during heavy rainfall periods. Water is prevented from flowing in some areas and is channeled to other areas. This alters the natural erosion and vegetation patterns along the road corridor. One result is the presence of exotic plants and other plants along the road edge that would not otherwise be there, brought in by long-

distance travelers and unnaturally provided moisture. Monument staff have counted wildlife deaths attributed to vehicle traffic, ranging from 7 to 67 animals per year since 1995. A study at Saguaro National Park reported that only 5% of the road-killed animals are still on the road the following morning, the rest having been removed by scavengers during the night. Although the two areas are very different and the monument reporting protocol is not rigorous, this does suggest that numbers of animals are killed because of the road and that the magnitude of impacts of the road on wildlife may be higher than what the staff has reported. Proper road maintenance requires occasional resurfacing, road edge vegetation manipulation, snowplowing, and culvert and shoulder attention. All of these actions have the potential to disturb wildlife and visitors. Most of the disruption of the ability to hear natural sounds at the site comes in the area of the park nearest to the park road. Presence of picnicking provides food attraction for wildlife. The overall effect of this is a moderate, localized negative impact.

The presence, preservation, and use of the Faraway Ranch historic district provides several negative impacts to the natural area. Visitor use disrupts wildlife. Picnicking, employee presence, and maintenance of fruit trees and a windmill provide nonnatural sources of food and water for wildlife. Preservation of historic structures eliminates the chance for lightning fires to exert their natural shaping influence, requiring the use of mechanical or prescribed fire techniques. Something about the former pastures and crop fields method of managing and maintaining the district seems to have influenced the presence of exotic plants, with over 30 being identified in this area.

Continuing the present situation of allowing the encroachment of woody vegetation and the presence of exotic plants would result in a continued inaccurate presentation of the historical scene and confusion for visitors. It would also be more difficult to control exotic plants and wildland fire. Native wildlife will

continue to find a less natural habitat situation. Again, these impacts are local and moderate. There will be a slight incremental negative impact to the surface hydrology, as the heavier vegetation contributes to evapotranspiration of available groundwater, reducing that which is available as surface creek flow.

Adaptive use of the historic structures as exhibit space or offices may be inviting the presence of rodents, requiring intensive pest management actions to protect human health and safety. Maintenance of a lawn surrounding the Ranch House requires regular applications of water from the shallow Faraway well. The connection between this source of water and surface water is not well understood, but there is concern that any administrative use may be reducing what is available for plants and animals.

Any attempts to maintain the Faraway landscape according to its historical form could mean compromises to the natural features. The overall impacts to the natural systems in the Faraway area are generally negative but are very localized. They would continue indefinitely.

The existence of the maintenance storage area provides a major impact in a very small area. The heavy equipment greatly compacts soil. Natural erosion and runoff have been altered. Waste wood, metal, PVC pipe, stone, cardboard, trash, and gravel are stored here, providing potential contamination sources, which could eventually reach the floodplain or the aquifer. Approximately one-quarter of the site and one storage structure are actually within the wilderness area. Use of the area generates occasional but loud noise that would disturb wildlife and the natural quiet.

Present and continued use of the visitor center with its exhibits, book sales, and administrative offices provides moderate impacts to the natural ecosystem in a very limited area, resulting in soil compaction and modified erosion and runoff. There is some compaction along the trail that

connects to the campground and Faraway Ranch. With the presence of the rest room and public phone and the need to provide nighttime illumination, there are some negative but limited impacts on nocturnal wildlife. There is an occasional need to relocate rattlesnakes to enhance public safety.

The presence of the visitor center generates noise by attracting and channeling human activities into this area. The presence of vehicle traffic, picnicking, visitor activities, and administrative use all serve to disturb the natural quiet. Human use and occupation of the area requires regular and considerable water consumption. There is an unknown relationship between well drawdown and connection with surface water availability. Any reduction in available water flow during drought periods could be critical or fatal to certain species of wildlife or aquatic insects.

Because of the presence of development facilities (ten residences, a maintenance complex, offices, aboveground gas tank, parking lot, supporting utilities, and the administrative road), there is moderate impact to the natural ecosystem in a very localized area. Construction of these facilities on a sloping area required some ground modifications. Rainfall is channeled from the road and building runoff, with alteration from its previous natural flow. Nighttime lighting attracts insects and bats. Human food (residences) serves to attract other wildlife. Human activity also negatively impacts the natural quiet.

The superintendent's house, swimming pool, heavy equipment storage, water well, and one-half mile long gravel road provide considerable activity in this floodplain area. The overall effects are negative for wildlife, natural water runoff, soil compaction, and natural quiet, but they are limited in area. Continued presence of these developments in this area precludes the return of natural wildfire into this part of Bonita Canyon. Many of these impacts are similar to those

described for the housing and maintenance area.

At the campground, there are 25 campsites, 2 CCC-era buildings (a public rest room and staff residence), public telephone, public water faucets, rustic fencing to control visitor movement, paved road, bridge, group site, amphitheater, entrance information kiosk, septic system and leach field, and two volunteer trailer pads with hookups. The presence of the campground has negative overall effects on the natural ecosystem, but in a very localized area. Soil compaction, accelerated erosion, wildlife disruption, vegetation manipulation, and generation of noise, which disturbs the natural quiet are some of the effects. Water use, generation of human waste and trash, creation of social trails, the presence of domestic animals, cooking, evening campfire programs, and vehicle traffic all contribute negatively.

Also, the campground is at the intersection of Bonita and Surprise Canyons, creating a potential human safety problem during heavy rainfalls. Additional education of monument staff and campground visitors is required to lower the flash flood risk to human life and property because of the location of campsites and the evacuation routes within the floodplain. The presence of the campground also eliminates the opportunity for lightning fires to progress naturally through the area. Occasional wildlife and visitor conflicts require relocation of the animals.

The 100-acre King of Lead Mine parcel of five patented mines is sandwiched between monument and Coronado National Forest land, with a 1-mile gravel road through the monument. The monument is required to maintain this steep road in an appropriate condition to provide the owner access to the King of Lead Mine. The mine has approximately five adits of varying lengths, water tanks, berms, and other equipment.

Preliminary tests show that there is some contamination present in the soil that would require cleanup if NPS acquired the property. The Red Horse Mine is also just within the boundary. This property contains an old shack, two adits, and various mining paraphernalia. It is the NPS intention to remove at least the shack, which has been determined to have no relevant historic connection.

The continued presence of the King of Lead and Red Horse Mines has a moderate negative effect on the natural ecosystem.

The road into the Sugarloaf parking area, picnic site, and trail to the lookout creates the same negative impacts as those described for the park road, picnic area, and wilderness trails. These include: soil compaction, erosion, alteration of natural rainfall sheetflow, wildlife disruption, trash disposal, development of social trails, and noise that disturbs the natural quiet. Presence of the lookout, trails, and exhibit building require periodic preservation maintenance actions that add to the human presence. The three vault toilets require regular janitorial, pumping, and maintenance visits. Staffing of the lookout as part of the fire management program also brings a regular human presence that requires food, human waste, and nighttime operation. Use of this area is expected to continue into the foreseeable future.

The 19 miles of trail from seven different trailheads in the wilderness area require periodic trail maintenance and erosion control. There is localized soil compaction, interruption of natural water flow, and disruption to wildlife caused by visitor foot traffic. These are minor and localized negative impacts, but necessary if visitors are to be allowed to hike the wilderness on foot. Use of horses by visitors also compacts the soil and might serve as a vehicle for introducing exotic plants, especially into areas protected from most other sources of exotic plant introduction by distance, elevation, and access. Horse use also negatively affects migrating animals,

such as neotropical migratory birds, and animals with large home ranges, such as mountain lions. Use of the wilderness by researchers doing permitted studies is disruptive to wildlife in the short term, because these studies could involve observation and capture of target species and could involve areas that are removed from normal visitor hiking areas. Studies could also involve consumptive use and harvesting of plants and other physical resources.

## **ECONOMIC CONTRIBUTION TO GATEWAY COMMUNITIES**

### **Affected Environment**

Chiricahua NM is in Cochise County in the southeast corner of Arizona. It is at the northern end of the Chiricahua Mountains, 37 miles southeast of Willcox, Arizona, and 124 miles southeast of Tucson. A range of services (including lodging, gas, and food) are located in Willcox, which is connected to I-10, a major transportation interstate.

Park tourism, park-related federal expenditures, and expenditures by other nonlocal parties on park-related activities and projects contribute to the local economy. Total combined sales from park operating expenditures is about \$6 million annually. Total tax revenue being gained from park-related expenditures is about \$512,000 annually. Operations and use of the park results in about 256 jobs in the area.

### **Impacts of Proposed GMP—Alternative A**

The proposal would provide a minor short-term increase the economic contribution to the local community. There are two types of increase estimated, short-term (from capital investment) and long-term (from an increase in the annual operating budget). In the short term, it is estimated that the expenditure of about \$6,000,000 would create a one-time benefit to the economy of \$10.5 million in total combined sales, approximately \$1 million in tax revenue, and

create 445 jobs for the life of the projects. This would not necessarily occur in the local economy. In the long term, increases in the operational budget for the park of \$233,500 would create a benefit to the economy of \$419,000 in total combined sales, approximately \$35,000 in tax revenue, and create 18 jobs in the local economy.

For every 1,000 additional visits, approximately \$45,000 in combined sales is added to the local economy along with \$3,800 in increased tax revenue. Two additional jobs are also created. For every \$100,000 expended by the park, approximately \$180,000 in combined sales is added to the local economy along with \$15,000 in increased tax revenue. Eight additional jobs are also created.

### **Impacts of Alternative B**

Alternative B would provide a minor short-term increase in the economic contribution to the local community. There are two types of increase estimated, short-term (from capital investment) and long-term (from an increase in the annual operating budget). In the short term, it is estimated that the expenditure of about \$4,000,000 would create a one-time benefit to the economy of \$6.9 million in total combined sales, approximately \$0.7 million in tax revenue, and create 294 jobs for the life of the projects. This would not necessarily occur in the local economy. In the long term, increases in operational budget for the park of \$186,500 would create a benefit to the economy of \$335,000 in total combined sales, approximately \$28,000 in tax revenue, and create 14 jobs in the local economy.

For every 1,000 additional visits, approximately \$45,000 in combined sales is added to the local economy along with \$3,800 in increased tax revenue. Two additional jobs are also created. For every \$100,000 expended by the park, approximately \$180,000 in combined sales is added to the local economy along with \$15,000 in increased tax revenue. Eight additional jobs are also created.

### **Impacts of the No-Action Alternative**

The no-action alternative would continue to provide income to the local economy. Total combined sales, sales benefits from park tourism, jobs created, and total tax revenue being gained from park-related activities would be the same as described above.

### **ADJACENT LANDOWNERS**

#### **Affected Environment**

Chiricahua NM is accessible from Willcox via U.S. 186 and from the southwest via Arizona 181. A 27-mile county road through Coronado National Forest, 14 miles of which is paved, provides access from U.S. 80 in New Mexico.

The monument is surrounded on the south, east, and north by the Coronado National Forest. Limited grazing occurs on these lands through grazing allotments administered by USFS. Private landowners adjoin the entire west boundary. Some of the private parcels are used for residential purposes, and one is an established bed and breakfast commercial operation. The remaining parcels are used for cattle grazing. The northeast corner of the park contains a 100-acre parcel of private land known as the King of Lead Mine. Two of the 100 acres are within the established boundary. The remaining 98 acres are surrounded by park boundary and USFS.

#### **Impacts of Proposed GMP— Alternative A**

The proposed GMP would ensure preservation and protection of the Bonita Creek watershed by eliminating the threat of future mining activities and development.

Working with USFS and adjacent landowners to provide additional camping facilities outside the current boundary would provide adequate facilities to accommodate the overflow camping situation. This would reduce the impacts to sensitive riparian areas on USFS lands. If the existing campground is damaged in future flooding or, as additional camping facilities are

developed outside the monument by private parties, the monument staff would consider closing all or part of the Bonita Creek campground on a seasonal or entire basis or converting it to day use picnicking only.

### **Impacts of Alternative B**

Impacts on adjacent lands would be the same as for Alternative A, although to a lesser extent.

### **Impacts of the No-Action Alternative**

Impacts of the no-action alternative would not substantially change from existing conditions. Potential adverse impacts to the Bonita Creek watershed could result if the currently inactive King of Lead Mine were to resume operations. This parcel is also subject to adverse development if sold to private developing interests.

The lack of a sewage dumping station would result in the continuance of inappropriate dumping of raw sewage onto the state highway right-of-way and private property.

The lack of overflow camping facilities would result in the continued practice of displacing camping to sensitive riparian areas on adjacent USFS lands. The overflow camping problem also affects private landowners adjacent to the park.

## **OPERATIONAL EFFICIENCIES**

### **Affected Environment**

See description in under Issues.

### **Impacts of Proposed GMP— Alternative A**

The construction of a new facility outside the existing boundary would result in the consolidation of all administrative functions. Considerable savings would be realized in terms of human and fiscal resources. Historic structures would be used more appropriately. New maintenance facilities would prevent the inappropriate encroachment into the designated wilderness area. Tremendous savings would be realized by having adequate

storage facilities to safeguard equipment, supplies, and materials.

Visitors would be more adequately served with a visitor facility large enough to meet the needs. Monument staff and visitors would be better informed concerning the immediate and potential flash flood risk in the monument, particularly in the Bonita Creek campground. An improved water distribution system would enhance employee and visitor safety by ensuring a dependable water supply exists.

### **Impacts of Alternative B**

Impacts on operational efficiency would be the same as for Alternative A, although to a lesser extent. Visitors would not be adequately served. Monument staff would have to employ different methods and greater use of personal services to serve visitors because of the lack of an adequate visitor orientation facility.

### **Impacts of the No-Action Alternative**

The effects of the no-action alternative would be a continuation of the present situation. Currently division chiefs and other employees occupy historic structures at various locations separate from the headquarters complex. Many of these structures are inadequate in size, lack heating and air conditioning, have no reasonable access to modern office equipment, and present significant exposure to rodent-borne diseases such as *hantavirus*. An inordinate amount of time is wasted because of travel time and distance to the headquarters facility for telefax and copy machine use. Communication links with employees working in outlying structures are difficult to maintain.

The maintenance facility occupies small structures constructed in the 1930s. The facilities are lacking in size, functionality, and location. The modern-day equipment cannot be adequately safeguarded and used in the current facilities. Expensive equipment and supplies are exposed to the elements because of inadequate space.



Outdoor storage space encroaches upon the designated wilderness area.

The current visitor center is too small to meet the needs of increasing visitation. Space is not available to conduct environmental education programs.

The existing water distribution system is inadequate to meet current public health service standards. Multiple dead end lines result in stagnant and potentially dangerous water supply. The system is inadequate to meet fire protection needs.

The current sewage disposal system has exceeded its maximum design capability, resulting in excessive amounts of raw sewage entering the shallow underground water aquifer.

### **SHORT-TERM AND LONG-TERM EFFECTS OF THE PROPOSAL**

Compared with a land base of more than 3,000 in the park, land-use consumption would decrease by about 2 acres with the removal of the existing visitor orientation function from inside to outside the park boundary. The proposal would improve long-term management, provide better protection to the environment, and enhance visitor experience.

Interpretation and visitor orientation would be more effective. Also, managers would be more efficient and effective in carrying out long-term management goals through

the use of broadly defined prescriptions for land management contained in the proposal.

### **IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES RELATED TO THE PROPOSAL**

Some archeological sites are subject to irreversible damage because of vandalism and loss of contextual relationships between objects that compromise a site. When objects are removed from a site, or moved within a site, this irreversible damage affects the potential for future archeological research to fully derive all scientific knowledge from that particular site.

Any increased visitation would tend to increase the amount of damage to archeological sites and the loss of artifacts no matter what protective measures are put in place or what messages are provided through interpretation and education.

### **CUMULATIVE EFFECTS OF THE PROPOSAL**

The impact analysis of the proposed GMP looks at all actions in the past, present, and reasonably foreseeable future that would affect Chiricahua NM and its visitors. No cumulative effects or elements of precedence were identified by any of the alternatives considered.

